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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,192	12/12/2003	Jae-Geol Cho	5000-1-501	2611

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EXAMINER

MCPHERSON, JOHN A

ART UNIT PAPER NUMBER

1756

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/735,192

Applicant(s)

CHO ET AL.

Examiner

John A. McPherson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-18 is/are allowed.
- 6) ☒ Claim(s) 1-10, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 19 is indefinite because the elements which comprise the claimed microlens, and their positions relative to each other, are unclear. Specifically, claim 19 is drawn to a microlens comprising a thin film material on a substrate, a photoresist pattern, a thin-film structure formed by etching the thin film, and a lens comprising the thin film structure reflowed. However, it is not clear how the microlens can comprise the thin film if the thin film has been etched to convert it into a thin film structure, and it is not clear how the microlens can comprise the thin-film structure if the thin-film structure has been reflowed to convert it into a lens. Additionally, the location of the photoresist relative to the lens is unclear.

Base upon a comparison to the method of claim 1, it appears that claim 19 is not drawn to the microlens only, but to a combination of each intermediate structure produced at the end of every step of the method, in addition to the finally produced microlens.

Similarly, claim 20 is indefinite because the elements which comprise the claimed optical module, and their positions relative to each other, are unclear. Likewise, claim

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20 appears to comprise a combination of each intermediate structure produced at the end of every method step of claim 11, in addition to finally produced optical module.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 6-326285 (JP '285). JP '285 discloses a method for manufacturing microlenses comprising the steps of forming a doped silicate glass film on a silicon substrate having a silicon oxide film thereon, the doped silicate glass comprising boro phospho silicate glass with about 6% phosphorus and about 4% boron; masking the doped silicate glass film with a photoresist; using the photoresist as a mask to etch the doped silicate glass film; and reflowing the doped silicate glass film, for example at 900 C for 30 minutes, to form a group of microlenses. See the abstract; paragraphs [0013] to [0020] of the computer-generated translation; and Figures 1-9.

3. Claims 1, 2, 5-10 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,846,694 to Strand et al. (Strand). Strand discloses a method for fabricating a spherical ball lens comprising the steps of depositing a doped silica material on a substrate, depositing and patterning a resist material to form pattern

masks, etching the doped silica material to form precursors, and applying heat to reflow the precursors to form near-circular cross sectional lenses. See the abstract; column 5, lines 13-29; and Figures 5A-H.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,064,266 to Sun et al. (Sun) in view of US 5,846,694 to Strand et al. (Strand). Sun discloses a method of forming circular channel waveguides and lenses comprising the steps of patterning a long rectangular waveguide and a short block waveguide on a substrate, the waveguides comprising a cladding layer and core layer, the core layer comprising SiO<sub>2</sub> and one or more dopants such as GeO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub> and P<sub>2</sub>O<sub>5</sub>; and heating the waveguides to simultaneously form the channel waveguides and monolithic lenses having circular cross section shapes. See the abstract; column 3, lines 17-58; column 4, lines 28-39; column 5, lines 22 to 66; and Figures 3A, 3B, 4A, 4B and 5. However, Sun does not teach patterning the waveguides by forming a photoresist pattern, and etching the structure using the photoresist pattern.

Strand discloses method for patterning a waveguide material comprising the steps of depositing a resist material on a waveguide material, removing unwanted

excess resist material to form a pattern mask, and etching the waveguide material. See the abstract and column 56-61. It would have been obvious to one skilled in the requisite art to utilize a resist material and an etching step, as taught by Strand, to pattern the waveguides in the process of Sun because it is taught that etching through a pattern mask formed from a resist is an art-recognized method for patterning waveguide materials.

***Allowable Subject Matter***

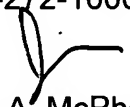
5. Claims 11-18 are allowed because in a method of fabricating an optical module having a micro-lens integrated therein as set forth in claim 11, the prior art does not teach or suggest the step (d) of forming a thin-film structure in a lens forming area by selectively removing the upper cladding layer in an area other than the area of the PLC and the lens forming area, nor does the prior art teach or suggest an optical module having such a structure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. McPherson whose telephone number is (571) 272-1386. The examiner can normally be reached on Monday through Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John A. McPherson  
Primary Examiner  
Art Unit 1756

JAM  
9/11/06